

### REMARKS

Claims 1 and 13 have been amended. Support for the amendments can be found throughout the specification, including, for example, the original claims. Claims 4, 15, and 22 have been cancelled without prejudice. No new matter has been added. Claims 1-3, 5-14, 16-21, and 23 are pending.

#### **Obviousness-type double patenting rejection**

The Examiner rejected claims 1-23 on the ground of obviousness-type double patenting over claims 1-23 of U.S. Patent No. 7,181,266 (see page 2 of the Office Action). Applicants note that a terminal disclaimer to the claims of this application was filed on September 8, 2006 in U.S. Patent Application No. 10/772,425 which is now U.S. Patent No. 7,181,266. A copy is attached as Appendix A. Thus, Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

#### **Rejections under 35 U.S.C. § 102(b)**

##### **Barbera-Guillem**

The Examiner rejected claims 1-2, 4, 6-8, and 13-22 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,333,110 to Barbera-Guillem et al. ("Barbera-Guillem") (see pages 3-4 of the Office Action). Applicants respectfully disagree. Claims 4, 15, and 22 have been cancelled. Claims 1 and 13 are independent.

Claim 1 relates to an imaging composition including a semiconductor nanocrystal having an outer layer bonded to the nanocrystal, wherein the nanocrystal emits light in the near-infrared or infrared wavelength regions.

Claim 13 relates to a method of imaging tissue including introducing a composition including a semiconductor nanocrystal into the tissue; and detecting emission from the semiconductor nanocrystal, wherein the emission is in the near-infrared or infrared wavelength regions.

Barbera-Guillem does not describe a nanocrystal emitting in the near-infrared or infrared wavelength regions. Barbera-Guillem broadly discloses a range of 400 nm to 750 nm for the

emission spectrum, which is the range of visible light (see, e.g., Barbera-Guillem at column 3, lines 60-61). In addition, all the examples of emission wavelengths disclosed are well within the visible spectrum (see, e.g., Barbera-Guillem at column 15, line 50 to column 16, line 4 (disclosing fluorescence peaks at 609 nm (orange), 545 nm (yellow), 522 nm (green), and 480 nm (blue)); at column 19, lines 49-55 (disclosing fluorescence peaks at 557 nm and 662 nm)). Thus, Barbera-Guillem does not disclose all the limitations of claim 1 or 13. Accordingly, claims 1 and 13, and the claims which depend therefrom are not anticipated by Barbera-Guillem.

Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

#### Bawendi

The Examiner rejected claim 3 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2001/0040232 to Bawendi et al. ("Bawendi") (see page 4 of the Office Action). Claim 3 depends from independent claim 1. Applicants respectfully disagree.

Claim 1 relates to an imaging composition including a semiconductor nanocrystal having an outer layer bonded to the nanocrystal, wherein the nanocrystal emits light in the near-infrared or infrared wavelength regions. There is no reference in Bawendi to a nanocrystal emitting in the near-infrared or infrared wavelength regions. The nanocrystals exemplified in Bawendi emit at wavelengths between 470 nm and 650 nm (see, e.g., Bawendi at paragraph 93 (describing overcoated (CdSe)ZnS nanocrystals emitting at 500 nm and 542 nm) and claims 36 and 42 (relating to a water-soluble nanocrystal emitting between 470 nm and 650 nm)). Thus, Bawendi does not disclose all the limitations of claim 1. Accordingly, claim 1 and the claims which depend therefrom are not anticipated by Bawendi.

Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

#### Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 5, 9-12, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Barbera-Guillem in view of Bryant et al., "Designing quantum dots and quantum-dot solids," *Physica E* **2001**, 11, 72-77 ("Bryant") (see pages 4-5 of the Office Action).

Applicants respectfully disagree. Claim 5 and 9-12 depend from independent claim 1. Claim 23 depends from independent claim 13.

Each of claims 1 and 13 relates to a composition or a method including a nanocrystal emitting in the near-infrared or infrared wavelength regions. As discussed above, Barbera-Guillem does not disclose a nanocrystal emitting in the near-infrared or infrared wavelength regions. Indeed, based on the exemplified compositions, Barbera-Guillem does not teach or suggest nanocrystals emitting in the near-infrared or infrared wavelength regions either. Bryant does not remedy this defect. Bryant describes optical absorption spectra for quantum-dot quantum-well barrier/well/barrier nanocrystals. There is no reference in Bryant, however, to a nanocrystal emitting in the near-infrared or infrared wavelength regions. Thus, neither Barbera-Guillem, Bryant, nor their combination teaches or suggests all the limitations of claim 1 or 13. Accordingly, claims 1 and 13, and the claims which depend therefrom are patentable over Barbera-Guillem in view of Bryant.<sup>1</sup>

Applicants respectfully request reconsideration and withdrawal of this ground of rejection.

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<sup>1</sup> Claims 5 and 23 are further patentable because they describe a composition or a method including a nanocrystal including a core of a first semiconductor material and an overcoating of a second semiconductor material on the core wherein the first semiconductor material and the second semiconductor material are selected so that, upon excitation, one carrier is substantially confined to the core and the other carrier is substantially confined to the overcoating. Neither Barbera-Guillem nor Bryant teaches or suggests a nanocrystal wherein, upon excitation, one carrier is substantially confined to the core and the other carrier is substantially confined to the overcoating. The Examiner argued that Bryant teaches a nanocrystal in which "the shell can act as an electron and hole trap" (see page 5 of the office action). This is distinguishable from the subject matter of claims 5 and 23. Bryant does not teach or suggest that one carrier is substantially confined to the core and the other carrier is substantially confined to the overcoating; in Bryant, both carriers, the electron and the hole, are confined in the shell. Thus, neither Barbera-Guillem, Bryant, nor their combination teaches or suggests all the limitations of claim 5 or 23. Accordingly, claims 5 and 23 are patentable over Barbera-Guillem in view of Bryant.

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CONCLUSION

In light of the foregoing amendments and remarks, Applicants respectfully ask that all claims be allowed. Please apply any charges or credits to deposit account 19-4293.

Respectfully submitted,

Date: 7-3-07



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## **APPENDIX A**